5.2 Replacement of fuses

Fuses are Littlefuse 3AB 314 series. fast-acting, high breaking current (max breaking current at least 750 A). Dimensions 1.25 inch long, 0.25 inch diameter. Replace fuses only by the same type and rating (250volt).

Models		Capacity	Fuse rating, Amps
89032-196	89032-210	2L	5
89032-198	89032-212	2L	5
89032-200	89032-214	5L	5
89032-202	89032-216	12L	10
89032-204	89032-218	18L	15
89032-206	89032-220	26L	15
89032-208	89032-222	12 & 5L	15

Replace fuses as follows:

1. Disconnect the unit from the power supply
2. Remove the mains input connector from the socket at the back of the bath
3. Press down the fuse drawer catch
4. Pull out the fuse drawer, check the fuse(s) and replace it if necessary, using the fuse type and rating specified above
5. Push back the drawer, and replace the mains input connector

5.3 Routine safety tests

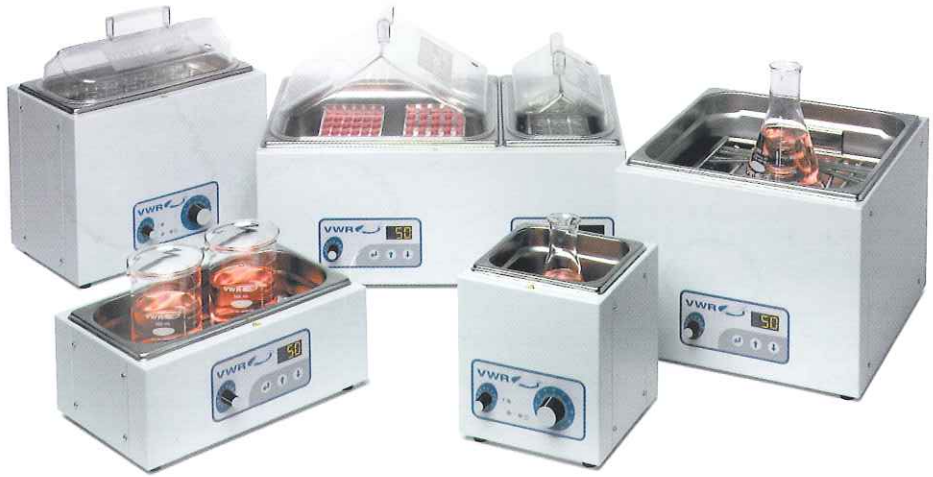
If routine tests are to be made, we recommend a test of the integrity of the protective earth conductor and an insulation test at 500 V d.c. Routine flash tests are **not** recommended for any electrical equipment, because repeated high voltage tests degrade insulation materials.

5.4 Service

If service is required, switch off the unit and contact your local VWR representative for repairs.

VWR™

Instruction manual



Introduction

VWR laboratory thermostatic baths provide the means to maintain samples at a precise temperature from just above room temperature up to 99^{0}C.

Contents

1. Safety

1.1 Warning symbols

The symbols below are marked on the equipment to indicate:

Caution: Surfaces and water can be hot during and after use.

Read this manual before using the bath

1.2 Safety certification

VWR water baths meet the requirements of international safety standard **IEC 61010-2-010: Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-010: Particular requirements for laboratory equipment for the heating of materials**, and national standards based on it, including:

UL 61010A-2-010
CAN/CSA-C22.2 NO. 61010-2-010-04;
EN 61010-2-010;

1.3 Safety features

To protect samples and in case of failure of the primary control system, there is a second, completely independent adjustable control system.

In addition to the second control system for sample protection, there is a separate fixed-temperature cut-out to protect the bath and surroundings in the very unlikely event of failure of both control systems.

1.4 Before first operating the equipment

Read the whole of these instructions. Safety may be impaired if they are not followed.

If the equipment has been transported or stored in cold or humid conditions, condensation may form inside it. If that could have happened, allow time (at least 2 hours) for the condensation to evaporate before using the equipment.

1.5 Precautions during and after operation

The bath is for use only with water as the bath liquid. Make sure that it cannot become contaminated by other liquids.

Before emptying a bath, allow the water temperature to fall to a safe level. For 18 and 26 litre baths, empty the bath before moving it.

Do not use the equipment in an area where there are aggressive or explosive chemical mixtures.

If potentially hazardous liquid is spilt onto the equipment, disconnect it from the power supply and have it checked by a competent person. It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on the equipment.

Do not use the bath to heat any material that could cause a fire or any other kind of hazard.

2. Getting started

2.1 Unpacking

Remove packing materials carefully, and retain for future shipment or storage of the equipment. Standard equipment includes:

- Thermostatic bath
- Mains cord with plug
- Gabled polycarbonate lid
- Polycarbonate base tray
- Operating manual

2.2 Optional accessories

If ordered, one or more of the following items may be included:

- Test tube racks
- Stainless steel base tray
- Raised shelves

2.3 Electrical supply

Check that the supply voltage marked on the serial number label, and the type of mains plug, are correct for your mains supply outlet, which must have a ground connector.

To disconnect the equipment from the mains supply, remove the mains plug from the mains supply outlet. Make sure that the mains plug is easily accessible.

2.4 Conditions of use

The water baths are for indoor laboratory use only. Check that the environmental conditions of the laboratory are within the following limits:

Temperature	5 to 40 °C
Maximum relative humidity	80 % r.h. in room temperatures up to 31°C decreasing linearly to 50 % r.h. at 40 °C
Altitude	Up to 6,500 feet (2,000 m) above sea level

3. Operation

3.1 Water level

Ensure that the water level is at least 2" (5cm) above the bottom of the tank, and not higher than 1" (2.5 cm) from the top. This applies both without any vessels in the bath and with the maximum contents.

If the bath is allowed to run dry, the safety cutout will trip and disconnect the heater. If this happens, unplug the bath and have the cut-out re-set by a competent person.

Water is the only liquid suitable for use in the baths.

3.2 Flat-bottomed vessels

If flat-bottomed vessels or objects are to be placed in the bath, always use the base tray to avoid possible damage to the heater mounted under the tank.

3.3 Operation above 60°C

The lid should always be used. Excessive evaporation will require the bath to be filled more often, and wastes energy.

3.4 Setting the temperature of VWR baths with analog control system

3.4.1 Indicator lamps

There are three indicator lamps:

1. Power on (green)
2. Heater on (orange) marked SSS
3. Warning (orange) marked ! Indicates that the temperature is being controlled by sample protection thermostat

3.4.2 Setting the control temperature

1. Turn the knob of the sample protection thermostat fully clockwise
2. Turn the knob of the primary temperature control to the desired temperature
3. Using the switch on the rear of the bath, turn the unit on and wait until the temperature has stabilized
4. Measure the temperature with a thermometer, and adjust the temperature control knob if necessary to obtain the desired temperature

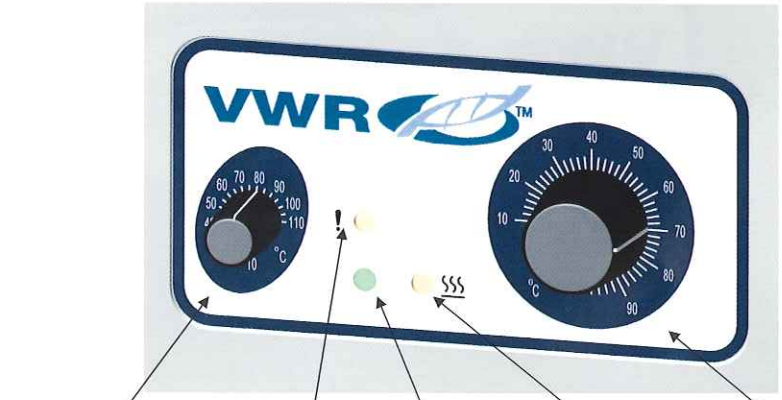
3.4.3 Setting the sample protection thermostat

1. Wait for the bath to stabilize at the correct temperature
2. Turn the sample protection thermostat control knob slowly anti-clockwise until the heater lamp stops going on and off, and then turn it clockwise until the heater lamp turns on again

3.4.4 Calibration of the temperature control knob

1. Carefully remove the cap of the control knob by levering it with a small screw driver
2. Undo the brass nut so that the knob can rotate on the shaft
3. Set the knob at the actual bath temperature, then tighten the nut and replace the cap

In the unlikely event of failure of the primary temperature control system, the sample protection thermostat will maintain the water in the bath at a temperature a few degrees above the set temperature, and with greater temperature fluctuations. This will be indicated by cycling of the two orange lamps. If this happens, first check that the sample protection thermostat is not set to a lower temperature than the primary control system. If that is **not** the reason, the control thermostat is not operating correctly. The bath can continue to be used without compromising the safety of persons or the surroundings until current work is completed. However, it is recommended to have the bath checked by a competent person as soon as conveniently possible.



VWR unstirred water bath
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3.5 Setting the temperature of VWR baths with digital control system

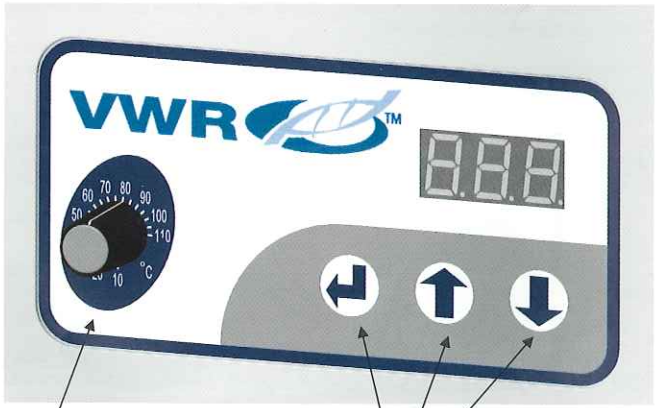
3.5.1 Setting the control temperature

1. Turn the knob of the sample protection thermostat to maximum
2. Press ↵ control key, the display will show °C, press ↵ control key again. The display will flash once a second with the current set temperature to show that the controller is ready to be re-set
3. Press **up** ↑ or **down** ↓ control keys to set the desired temperature (If no key is pressed for 15 seconds, the display will revert back to showing the actual temperature and the set point will remain at its original value)
4. Press ↵ control key. This will store the requested value and the display will revert to showing the actual water temperature. The water temperature will change to the new set value
5. Measure the temperature with a thermometer, and adjust the set temperature again if necessary

3.5.2 Setting the sample protection thermostat

1. Turn the knob of the sample protection thermostat to maximum
2. Set the control temperature 2^0 C above the desired operating temperature, and wait for the temperature to stabilize
3. Turn the knob of the sample protection thermostat slowly anti-clockwise until a click is heard and Err is displayed
4. Re-set the control temperature to the desired temperature

In the unlikely event of failure of the primary temperature control system, the sample protection thermostat will maintain the water in the bath at a temperature a few degrees above the set temperature and with greater fluctuations. The display will cycle between Err and the actual bath temperature. If this happens, first check that the sample protection thermostat is not set to a lower temperature than the primary control system. If that is **not** the reason, the primary control system is not functioning correctly. The bath can continue to be used without compromising the safety of persons or the surroundings until current work is completed. However, it is recommended to have the bath checked by a competent person as soon as conveniently possible.



3.5.3 Single point calibration (SPC)

The display of set temperature and actual temperature is accurate to within 1 °C at 37 °C but may be up to 5^0 C out at maximum temperature. Using SPC the displays can be re-set to be accurate to ±0.1^0 C at a single point by the following procedure:

1. Press ↵ control key. The display will show **°C,** press the **up** ↑ control key and the display will show SPC, press ↵ control key to enter SPC mode. The display will flash once a second with the current value and shows that the controller is ready to be re-set
2. Press **up** ↑ or **down** ↓ control keys to set the amount of correction value (positive or negative) as measured by a thermometer. (If no key is pressed for 15 seconds, the display will revert back to showing the actual temperature and the set point will remain at its original value)
3. Press ↵ control key. This will store the new corrected set temperature and the display will revert to showing the new correct actual water temperature

4 Specification

4.1 Electrical details

Mains supply 120Vac (+/- 10%), 60 Hz

Models		Capacity	Watts
89032-196	89032-210	2L	130
89032-198	89032-212	2L	130
89032-200	89032-214	5L	375
89032-202	89032-216	12L	770
89032-204	89032-218	18L	1200
89032-206	89032-220	26L	1200
89032-208	89032-222	12 & 5L	1200

4.2 VWR analogue bath performance

Range	5^0 C above ambient to 98^{0}C
Setting scale	10 to 98^0 C in 2^{0}C graduations
Temperature stability to DIN 12876-3	± 1.0^{0}C

4.3 VWR digital bath performance

Range	5^{0}C above ambient to 99^{0}C
Display (also used for setting)	5.0 to 99.0^{0}C in steps of 0.1^{0}C
Temperature stability to DIN 12876-3	± 0.2^{0}C

5 Maintenance and service

No routine maintenance is required except for cleaning.

5.1 Cleaning

Clean the outside of the equipment with a damp cloth, using water only. Do not use chemical cleaning agents. Before using any other cleaning or decontamination method, check with your local VWR representative to make sure that the proposed method will not damage the equipment.

Scale on immersed parts can be removed using chemical de-scaling products designed for use on kitchen equipment which has metal parts.

Warning - De-scaling products may be toxic - follow the manufacturer's instructions.